

SKILLS INTRODUCTION**Developing a Hypothesis**

Suppose you and your neighbor are growing tomatoes. One day you notice that your neighbor's plants are much bigger than yours. What's causing the difference? How can you get your plants to grow as big as your neighbor's?

The question you asked about the tomato plants could lead you to develop a hypothesis. A **hypothesis** (plural: *hypotheses*) is a prediction about the outcome of a scientific investigation. Like all predictions, hypotheses are based on a person's observations and previous knowledge or experience.

In science, hypotheses must be testable. That means that researchers should be able to carry out an investigation and obtain evidence that shows whether the hypothesis is true or false. The way a hypothesis is written can outline a way to test it. Try to word each of your hypotheses in the form of an *If . . . then . . .* statement.

Read the following three examples. Notice which of these predictions are testable. Notice which are properly worded hypotheses.

Example 1: If I give my plants fertilizer, then they will grow as big as my neighbor's plants. (testable and properly worded)

Example 2: If I get lucky, then my plants will grow bigger. (not testable, because you can't control "getting lucky")

Example 3: My plants aren't growing bigger because I don't water them enough. (not worded properly)

**Tips for Developing Hypotheses**

- ◆ Ideas for hypotheses often result from problems that have been identified or questions that have been raised. To help develop ideas for a hypothesis, write down several questions about the topic. Try to narrow the questions to one that can be investigated scientifically. Then write the hypothesis.
- ◆ Make sure the hypothesis is a prediction.
- ◆ Make sure the hypothesis can be tested through an investigation.
- ◆ Check the way you worded the hypothesis. A properly worded hypothesis should take the form of an *If . . . then . . .* statement.

✓ **Checkpoint** Write a properly worded hypothesis based on this question: "Will empty trucks use the same amount of gas as heavily loaded trucks?"